IN THE CLAIMS

Please replace any previous listing of the claims with the following replacement listing of the claims:

Replacement Listing of the Claims

1. (Currently amended) A decoding power aware encoding method for generating a predictively encoded data stream, in which predictions, that result in a reduction in the amount of reference data transferred from a secondary memory to a primary memory during a decoding process, are favored, said method for favoring certain predictions comprising:

(a) providing a primary memory model ~~for~~ that emulates an operation of transferring and keeping a part of said reference data from said secondary memory to said primary memory in the decoding process;

(b) finding at least one candidate that is a match between a current block of an input data sequence and said reference data located in said primary memory model ~~a scheme for weighting relative merits of favoring a certain prediction and the associated loss in compression gain, and~~;

(c)assigning quality and rate measures to each said candidate; and

(d) based on said ~~weighting scheme~~assigned measures, choosing a particular one of the ~~predictions from~~ candidates to reduce said secondary memory accesses of said decoder ~~allowed by the compression scheme~~.

2. (Currently amended) A power aware decompression method for decoding a predictively encoded data stream, comprising:

running a prediction process for a current frame of said predictively encoded data stream by:

(a) generating a first selection signal which signals whether prediction data for said current frame ~~a prediction process~~ resides in a primary memory in part or in whole, wherein said primary memory is dedicated to storage of prediction data;

(b) if the first selection signal indicates that a portion of ~~the~~ said prediction data or the whole of ~~the~~ said prediction data for said current frame is not present in said primary memory:

i. generating a second selection signal, based on an estimate of future needs of the prediction process, to signal that portion of said primary memory where said prediction data for said current frame, which is not already present in said primary memory, should reside, and

ii. transferring said prediction data for said current frame that is not already present in primary memory, from a secondary memory to that portion of said primary memory indicated by the second selection signal; and

(c) generating a prediction signal by manipulating said prediction data residing in said primary memory; and

~~(d)~~ using said prediction signal to provide motion compensation in a decode of said predictively encoded data stream.

3. (Currently amended) A method for decoding a coded data stream comprising:

(a) processing the coded data stream to produce outputted decoded data frames;

(b) transmitting signals to and receiving first signals from an external memory for storage of previously decoded reference data frames, and

(c) transmitting signals to and receiving second signals from a primary memory, which is dedicated for storage of some of previously used ~~decoded reference~~prediction data ~~frames~~ obtained from ~~an~~ said external memory, and wherein said second signals retrieve selected prediction data from ~~ones of~~ said previously decoded ~~reference~~ prediction data ~~frames~~ from said primary memory; and

(d) searching said primary memory for prediction data of a ~~a best match between a~~ current ~~one of said~~ data being decoded ~~frames and said previously decoded data frames~~, wherein step (a) uses said ~~best match~~prediction data in decoding ~~to provide motion compensation~~.

4. (Currently amended) A system for decoding a coded data stream comprising:

(a) a processor that outputs decoded data frames;

(b) an external memory that stores prediction data for decoding said coded data stream;

(c) an internal primary memory having a high speed access relative to a lower speed access of the external memory, wherein said internal primary memory is dedicated to storage of prediction data obtained from said external memory, and

(d) a memory manager that decreases an amount of traffic to the external memory so as to provide better real-time performance and power saving by a connection arrangement for transmissions from said processor to said external memory and said internal primary memory, wherein said internal primary memory is dedicated to a motion compensation function of data decoding, wherein said motion compensation function searches said internal primary memory for a certain prediction data and, if not found, retrieves said certain prediction data from said external memory for storage in said internal primary memory.

5. (Canceled)

6. (Previously presented) A system as defined in claim 4, wherein said processor receives the coded data stream at its input, and has an output respectively connected to said external and internal primary memories and a further output providing decoded data frames.

7. (Currently amended) A system for decoding a coded data stream comprising:

(a) a processor that outputs decoded data frames of said coded data stream;

(b) a motion compensator comprising a memory that stores a reference data frame as well as a data frame being decoded currently;

(c) an external memory that stores prediction data;

(d) an internal primary memory having a high speed access relative to a lower speed access of the external memory, and

wherein said internal primary memory is dedicated to storage of prediction data obtained from said external memory and a motion compensation function of decoding, wherein said motion compensation function searches said internal primary memory for a certain prediction data and, if not found, retrieves said certain prediction data from said external memory for storage in said internal primary memory.

8. (Currently amended) A system for encoding an input bit frame comprising:

(a) a primary memory model that emulates an operation of a primary memory in a decoder and that stores a part of previously used reference data according to a decoding process ~~reference frames~~;

(b) a motion estimator that receives a current block of an ~~for receiving said~~ input video data sequence to be encoded ~~frame~~ and searches said primary memory model ~~for searching said data reference frames~~ to find at least one candidate as a ~~best~~ match between said ~~input frame~~current block and said reference data ~~an area in one of said data reference frames~~;

(c) ~~a~~ said primary memory model being coupled to ~~the~~ said motion estimator;

(d) a motion vector selector that is coupled to ~~the~~ an output of the motion estimator and that chooses said candidate as a predictor of said current block accordingly; and

(e) a quality and rate controller that provides quality and rate measures for each candidate ~~coupled~~ to the motion vector selector.

9. (Previously presented) A system for encoding a data frame as defined in claim 8, further comprising a motion vectors module for determining the motion vectors based on a current block and said best match.

10. (Currently amended) A computer readable medium encoded with computer executable instructions for controlling the processing of a system that decodes a coded data stream, said set of computer executable instructions comprising the steps of:

(a) controlling a processing of a coded data stream to produce outputted data frames;

(b) controlling a transmittal of signals to, and a reception of signals from, a high speed primary memory, which is dedicated for storage of previously decoded reference data ~~frames~~ obtained from an external memory, and wherein said signals retrieve selected ones of said previously decoded reference data ~~frames~~;

(c) controlling a transmittal to, and a reception of signals from, said external memory,

(d) searching said primary memory for a ~~best~~ match between ~~said~~ a current data ~~frame~~ and said previously decoded data ~~frames~~, wherein step (a) uses said ~~best~~ match to provide a predictor in motion compensation; and

(e) controlling an amount of traffic to said external memory by first searching said primary memory for a prediction data of a certain previously decoded data frame and, if not found, obtaining said prediction data from said external memory.

11. (New) The method of claim 1, wherein said choosing step chooses said candidate if a difference between said current block and said candidate is less than a first quality and rate measure.

12. (New) The method of claim 11, wherein if said candidate is greater than said first quality and rate measure, said finding step further searches a second memory, which stores reference data without regard for said decoding process, for at least one other candidate that is a match with said current block, and wherein said choosing step chooses said other candidate if a total difference between said current block and said other candidate is less than a total difference between said current block and said candidate found in said primary memory by more than a second quality and rate measure.

13. (New) The system of claim 8, wherein said motion vector selector chooses said candidate if a difference between said input block and said candidate is less than a first quality and rate measure.

14. (New) The system of claim 13, wherein if said candidate is greater than said first quality and rate measure, said motion estimator searches a second memory, which stores reference data without regard for said decoding process, for a second match with said current block, and wherein said motion vector selector chooses said other candidate if a total difference between said input block and said other candidate is less than a total difference between the input block and the candidate found in said primary memory by more than a second quality and rate measure.